

Melithreptes letior, sp. n.

Head and nape black, as well as the lores and ear-coverts ; the cheeks and a band of feathers round the occiput pure white ; back greenish yellow, brighter on the rump and shading off into bright lemon-yellow on the hind neck and sides of the latter ; tail brown, with a narrow whitish edging at the tip, all but the outer feathers margined with greenish yellow ; wings ashy brown, externally washed with grey, the primaries narrowly margined with whitish ; under surface of body white, the breast and flanks shaded with ashy, and the chin black, fading into ashy brown on the throat and producing a distinct chin-stripe ; under wing-coverts white, shaded with ashy.

Total length 5·5 inches, culmen 0·6, wing 3·4, tail 2·7, tarsus 0·75.

Although very closely allied to *M. gularis*, Gould, this species is altogether a much more finely coloured bird. In size it is slightly larger, and is at once to be distinguished by its white under surface and the beautiful lemon-yellow of the neck. The ashy shade which pervades the entire lower surface of *M. gularis* is not seen in *M. letior*.

PROCEEDINGS OF LEARNED SOCIETIES.

ROYAL SOCIETY.

April 8, 1875.—Joseph Dalton Hooker, C.B., President, in the Chair.

“First Report of the Naturalist attached to the Transit-of-Venus Expedition to Kerguelen’s Island, December 1874.” By the Rev. A. E. EATON.

To the Secretary of the Royal Society.

Royal Sound, Kerguelen’s Island,
31st December, 1874.

DEAR SIR,—It is difficult, owing to the inexactness of the charts, to inform you of the positions of the Astronomical Stations in whose neighbourhood I have been able to work in this island. The German Station is in Betsy Cove, the American at Molloy Point, Royal Sound. The English Stations also are in this Sound, the second being situated about three miles N. by W. of Swain’s Hauloyer. The first English Station is between these last two on the mainland, six or seven miles N.W. of Three-Island Harbour, in what will be called Observatory Bay. Two days before the Transit of Venus, a party under Lieut. Goodridge, R.N., was detached from

the first English Station to observe the transit from a position which he selected near the base of Thumb Peak. I have not yet been able to visit Betsy Cove.

Observatory Bay is one of the minor inlets of a peninsula comprised between two narrow arms of the sea. One of these runs up from the sound, along the western flank of the hills adjacent to Mount Crozier, several miles, and terminates at a distance of three or four hours to the north of us, and about four miles from the inlet near Vulcan Cove. The other arm, opening nine or ten miles away to the southward, proceeds in a north-easterly direction to within three or four miles of the former, and no great distance from Foundry Branch.

Besides the inlets of the sea, numerous freshwater lakes present obstacles to inland travelling. Some in this neighbourhood are two or three miles in length; but in general they are not more than a mile long. They are usually shallow, and appear to be uninhabited by fish. The bogs and streams in this vicinity are not impassable, but can be traversed with ease if ordinary care be taken.

The most salient features of the landscape are the basaltic hills, with irregular terraces of rock on their sides, and broken cliffs at their summits. In lieu of grass, their slopes are clothed with banks and boulder-like clumps of *Azorella selago*, excepting where rich damp loam affords a soil suitable for the *Acena* and the *Pringlea*. Here and there a fern (*Lomaria*) and grass (*Festuca*) grow in the interspaces of the other plants.

The climate of Royal Sound is far warmer and drier than we were led to expect it would be. In November the weather was very pleasant; since then it has deteriorated, though the snow has not again covered the ground as it did when we first arrived. Probably the previous accounts of its meteorology were based upon observations taken in parts of the island where bad weather prevails; or it may be that the condition of the country in winter has been presumed to be constant throughout the year. In one respect we were rightly informed; for, usually, when there is no breeze there is a gale: a calm day is an exceptional event. Meteorological observations are being taken in Observatory Bay on board the 'Volage' and by the sappers on shore.

Corresponding with the unlooked-for superiority in climate, a difference is noticeable in the vegetation of this part of the island. Some plants which occur at both extremities of the country display, in Royal Sound, marks of luxuriance. For instance, *Pringlea antiscorbutica*, which is elsewhere apetalous, here, in sheltered places, frequently develops petals—some flowers in the same inflorescence possessing one petal only, others having two, three, or four. And the petals are not always of a pale greenish colour, but occasionally are tinged with purple. Again, *Lomaria alpina*, which is mentioned in the flora as rare in the neighbourhood of Christmas Harbour, is excessively common and very finely grown here. There are also more species of flowering plants and of the higher orders of

Cryptogamia here than were found by the Antarctic Expedition at the north of the island; but there are fewer species of Mosses, Lichens, and Algæ. Their paucity, in comparison with those of the other district, is probably due to the nature of the rocks on land, and to the seclusion of the bay from the open sea. The additions to the flora are for the most part Falkland-Islands species.

In speaking of the climate, it may be mentioned that the plants of Kerguelen's Island are not (as was supposed) in flower throughout the year; but probably some of them do not cease flowering until late in the winter. When we first arrived in Royal Sound the ground was covered with snow, and scarcely any thing had begun to come out. The *Pringlea* was far advanced in bud, barely commencing to blossom. The *Acena* was just beginning to burst into leaf. About the first week in November, *Festuca Cookii* came out, and, a few days later, *Azorella selago*. The young fronds of the ferns were just about to unroll. In the third week of the same month, *Montia fontana* and *Acena affinis* were in flower in a sheltered spot, and *Leptinella plumosa* was first found in blossom. *Galium antarcticum* appeared about the same date. A week later, *Ranunculus hydrophilus* and a *Festuca* (*purpurascens*?) were out, and *Lycopodium clavatum* was sprouting. By the middle of the month, *Triodia* and *Lyallia kerguelensis* and also *Ranunculus crasipes* were in flower, the *Pringlea* was everywhere past flowering (excepting upon the mountains), and *Aira antarctica* began to shoot forth its panicles. Before the end of the month a *Carex* came out; but *Bulliarda* and other plants delayed still.

A few species of Mammals have been introduced into the island. Mice (evidently *Mus musculus*, L.) are common along the coast, and have been found by us in various places. The Rabbits, transported by order of the Admiralty from the convict settlement in Table Bay, have been landed by H.M.S. 'Volage' in Royal Sound. They share with the birds holes of the Petrels, and are (it is almost superfluous to mention) propagating freely. Their favourite food is the *Acena*; but they occasionally eat *Pringlea*-leaves and gnaw away the green surface of *Azorella*. In the Crozettes, whose climate and flora are said to resemble those of this island, rabbits have become extremely abundant, and so rank and coarse that the sealers will not eat them. Goats are increasing in numbers on the leeward side of the mainland.

Whales and Porpoises occasionally enter the Sound. Old skulls of the latter, wanting the lower jaw, are cast up here and there on the beaches.

Up to the present time, I have captured only two species of Seals—a female Sea-leopard and two males of a Platyrrhine Seal. The other kinds frequent the more open parts of the coast and islands.

Twenty-two species of birds at the fewest, perhaps twenty-three, frequent Royal Sound, viz. a *Chionis*, a Cormorant, a Teal, a Tern, a Gull, a Skua, eleven (perhaps twelve) Petrels, two Albatrosses, and three (perhaps four) Penguins. Of these, I have pro-

cured eggs of the first six, also of six Petrels, one Albatross, and two Penguins. The *Thalassidromæ* are preparing for laying.

Fish are rather scarce in Observatory Bay. Only three species have hitherto occurred to us, two of which are common under stones at low water. The remains of a *Raia* have also been picked up on one of the islands by an officer of the 'Volage;' but hardly sufficient is left to enable the species to be determined. It is allied to *R. clavata* and *R. radiata*.

The entomology of the island is very interesting. Most of the larger insects seem to be incapable of flight. I have found representatives of the orders Lepidoptera, Diptera, Coleoptera, and Collembola.

The Lepidoptera comprise a species of the Noctuidæ (as I suppose) and one of the Tineidæ. Of the first I have not yet reared the imago; the larva is a moss-eater and subterranean: the adult is probably as large as an *Agrotis* of medium size. The species of Tineidæ is probably one of the Gelechiidæ, judging from the form of the palpi. Its larva feeds on young shoots of *Festuca*, and sometimes spins a silken cocoon for the pupa. The imago, of which the sexes are alike, has acute and very abbreviated wings, and the posterior pair extremely minute. In repose the antennæ are widely separated and almost divaricate. When the sun shines the adult is active, and, if alarmed, jumps to a distance of two or three inches at a time. During its passage through the air the wings are vibrated.

The Diptera are represented by species of the Tipulidæ and Muscidæ. There are three of the former family. One of them is a small species of the Cecidomyidæ, which is abundant in mossy places, and presents no marked peculiarity. Another seems to be a degraded member of the Tipulidæ. The antennæ have six joints, the palpi two; the wings are ligulate and very minute. It possesses halteres, and the female has the ovipositor enclosed in an exposed sheath. Although it is unable to fly, it lives upon rocks in the sea which are covered at high water, and there it deposits its eggs in tufts of *Enteromorpha*. The third species has full-sized wings; it was caught in the house. The indigenous Muscidæ are very sluggish in their movements, and are incapable of flight. Four species are common about here. One of them is abundant on *Pringlea*, crawling over the leaves. When it is approached it feigns to be dead, and, tucking up its legs, drops down into the axils of the leaves; or if it happens to be upon a plane surface, one need only look at it closely, and it throws itself promptly upon its back and remains motionless until the threatened danger is over, when it gradually ventures to move its limbs and struggle to regain its footing. Its wings are represented by minute gemmules; and it possesses halteres. The ovipositor is extended, its apical joint alone being retracted. The penis is porrected beneath the abdomen, where it fits into a notch at the apex of the penultimate segment. The larva feeds on decaying vegetable matter. Another species occurs on dead birds and animals, as well as beneath stones near

the highest tide-mark. It is completely destitute of even the vestiges of wings and halteres. The sexual organs are concealed. It and the preceding species are rather smooth. A third species, slightly hairy, is common amongst tide-refuse and on the adjacent rocks, which are coated with stunted *Enteromorpha*, on which plant, *inter alia*, the larva feeds. It has very small triangular rudiments of wings, slightly emarginate near the apex of the costa, and possesses halteres. The sexual organs are not exposed. The fourth species occurs amongst grass growing along the shore and also in Shag-rookeries. Its linear and very narrow wings are almost as long as the abdomen. It can jump, but cannot fly. The sexual organs are retracted.

A *Pulex* is parasitic upon *Halidroma*, and one (possibly the same species) on *Diomedea fuliginosa*.

Coleoptera are not uncommon. The larger species seem to have their elytra soldered together. There is a small species of the Brachelytra.

Several species of Nirmidæ have been obtained.

Two *Poduræ* (one black, the other white) are plentiful.

There appear to be few species of Spiders, though individuals are numerous. Penguins and some of the other birds are infested with Ticks. The remaining Arachnida are related to *Oribates*.

The Crustacea, Annelida, Mollusca, and Echinodermata in this part of the island have probably been collected by the 'Challenger' more extensively than I have been able to do; therefore I need not particularize further about them than to state that Entomostrea abound in the lakes, an earthworm is common, and a land-snail is very plentiful amongst the rocks on the hills. This last appears to appreciate comparative heat; for specimens obtained in an exposed place, during the frosty weather, were assembled together for warmth under the drip of an icicle.

In Observatory Bay, Cœlenterata are not numerous. One or two species of Actiniidæ on the rocks and *Macrocystis*-roots, and an Ilyanthid in mud, are the only Actinozoa I have met with. The Hydrozoa similarly have afforded only three species—a Corynid, a Campanularian, and a *Sertularella*.

There are several Sponges.

With the exception of *Limosella aquatica*, and perhaps *Agrostis antarctica*, I have obtained all the flowering plants and ferns given in the 'Flora Antarctica' as indigenous to the island. Besides these, *Ranunculus hydrophilus* and another species, a *Carex*, a *Festuca* (probably *F. purpurascens*; but I have no work containing descriptions of the flowering plants), *Polypodium vulgare*, a fern allied to *Polypodium*, and *Cystopteris fragilis* have occurred to me. There is also a plant which appears to belong to the Juncaceæ. *Lycopodium clavatum* and *L. selago* are common about here. None of the Mosses, Hepaticæ, or Lichens have been worked out as yet; but amongst them are one or two species of *Cladonia*, and some examples of *Lecanora palcacea*. Fungi are represented by *Agaricus (Psalliota) arvensis*, *Coprinus atramentarius*, and a peculiar parasite

on *Azorella*, which grows out from the rosettes in the form of a clear jelly, which becomes changed into a firm yellowish substance of indefinite form. There are also some Sphæriacei on grass and dead stems of plants. At present few additions have been made to the marine flora. The larger Algæ in Royal Sound are usually not cast upon the shore by the waves; and I have almost been entirely dependent upon grapples thrown from the rocks for specimens of the more delicate forms. *Polysiphonia Sullivance* and *Rhytiphloea Gomardii* are amongst the novelties. A large number of zoological and botanical specimens have been lost through my inability to attend to them in time without assistance. This has principally affected the number of duplicates; but in one instance it has led to the loss of a species—one of the Petrels, which was the commonest bird about here when we first arrived. Fortunately it is a well-known species.

The 1st of March is announced as the approximate date of our sailing from Kerguelen's Island. Five weeks later I hope to arrive at the Cape and to forward to you such of the specimens collected as require only ordinary care in their transmission. The more fragile things are likely to reach you in better condition if I keep them until my return to England, than they would if they were sent with the others.

I am, dear Sir,

Faithfully yours,

A. E. EATON.

June 10, 1875.—Joseph Dalton Hooker, C.B., President, in the Chair.

“On the Organization of the Fossil Plants of the Coal-measures. —Part VII. *Myelopteris*, *Psaronius*, and *Kaloxylon*.” By W. C. WILLIAMSON, Professor of Natural History in the Owens College, Manchester.

In his ‘Dendrolithen’ Cotta first figured some supposed stems under the name of *Medullosa*, to one of which he gave the name of *Medullosa elegans*. Corda subsequently figured a portion of the same plant, in his ‘Flora der Vorwelt,’ under the name of *Palmacites carbonigerus*, in the belief that it was the stem of an arborescent palm. M. Brongniart next gave to the plant the name of *Myeloxylon*, and at the same time expressed strong doubts respecting its monocotyledonous character. Goepfert gave this plant the generic name of *Stengelia*. In 1872 Mr. Binney expressed his belief that the plant was “the rachis of a fern, or of a plant allied to one.” At the Meeting of the British Association at Bradford, in September 1873, the author described this plant, and pointed out his reasons for believing it to be not only a fern, but to belong to the interesting family of the Marattiaceæ; and in the subsequent January Professor Renault read a description of the plant to the Academy of Sciences at Paris, when, on independent evidence, he arrived at the same conclusion, viz. that it was one of the

Marattiaceæ. Slightly modifying M. Brongniart's generic name, M. Renault designates the plant *Myelopteris*.

The author has obtained well-marked examples of this plant from the Lower Coal-measures near Oldham, from a rachis nearly an inch in diameter to the smallest leaf-bearing twigs and leaflet-petioles. It consists of a mass of parenchyma encased in a hypodermal layer of sclerenchymatous prosenchyma, arranged in anastomosing longitudinal bands, separated, when seen in tangential sections, by vertically elongated areolæ of parenchyma, which latter has probably spread out as a thin epidermal layer investing the entire rachis. These fibrous bands project inwards with sharp wedge-shaped angles; and in some examples portions of them become isolated as free fibrous bundles, running vertically through the peripheral portion of the inner parenchyma of the rachis. Numerous vascular bundles run vertically through this parenchyma. In transverse sections, not distorted by pressure, these bundles are arranged in some degree of regular order. This is especially the case with a circle composed of the peripheral series of bundles. Their component vessels are spiral in the case of some of the smaller ones, and barred, very rarely reticulate, in a few of the larger vessels. Scattered abundantly throughout the parenchyma are numerous narrow intercellular gum-canals. The majority of these are isolated; but in most of the specimens there runs side by side with the vessels, and enclosed within the special cellular sheath which imperfectly encloses each bundle, a canal, of varied sizes and shapes, which appears to have been originally a gum-canals, subsequently enlarged irregularly by the shrinking of the neighbouring tissues. In the larger and more matured petioles these vascular bundles are very conspicuous, both in transverse and longitudinal sections; but in the small, young, and terminal subdivisions of the rachides the vessels are so small as to be almost undistinguishable from the surrounding parenchyma, while the gum-canals of such examples are, on the other hand, conspicuously large. Transverse sections of the most perfect examples of these young rachides exhibit, on their upper surface, a rounded central ridge, flanked on either side by a longitudinal groove, which arrangements are so conspicuous in the corresponding portions of the petioles of the Marattiaceæ and of other ferns. The ultimate leaflet-petioles were given off at right angles to the central rachis from which they sprang, corresponding in this respect with *one* of the types described by M. Renault. The author has not yet found in Lancashire any of the large specimens that have been met with on the continent at Autun and in the localities whence M. Cotta obtained his examples. He has found a few and yet smaller fragments among the sections from Burntisland. The recognition of the Marattiaceous character of these plants excludes the *Palmaceæ* for the present from all claim to share in the glories of the Carboniferous vegetation.

The second plant described by the author consists of clusters of roots with a portion of the outermost parenchymatous layer of

the stem of a tree fern, corresponding to those of the *Psaronites* long known to characterize the upper Carboniferous deposits of Autun and other localities. The roots of the Oldham specimen, to which the author has assigned the name of *Psaronites Renaultii*, consist of a well-defined cylinder of sclerenchymatous prosenchyma, within which has been a mass of more delicate parenchyma, in the centre of which was the usual vascular bundle. But what characterizes the specimens, distinguishing them from the numerous species described by Corda, is the existence of vast numbers of cylindrical hairs, each composed of a linear row of elongated cylindrical cells: these have obviously been the absorbent root-hairs of the living plant, which may possibly have been some species of *Stemmatopteris*; but of this there is as yet no evidence.

The author then describes a small but very remarkable stem, to which he assigns the name of *Kaloxylon Hookeri*. This is a slender stem, rarely more than from one seventh to one tenth of an inch in diameter. In its young state it consists of a central vascular axis which has a hexagonal section, and which is composed of numerous vessels of various sizes, each of which exhibits the reticulate form of the scalariform or barred type, and which is so common amongst the plants of the Coal-measures. No true barred or spiral vessels have yet been seen in the *Kaloxylon*. In the young twigs this vascular axis is surrounded by a mass of large-celled cortical parenchyma, which, in turn, is encased by an epidermal structure, composed of a double row of what have evidently been colourless cells, and which are elongated vertically, but with square ends.

In the more matured stems, the central vascular axis of the young twigs becomes the centre whence radiate six exogenously developed wedges of vascular tissue, each of which enlarges as it proceeds outwards and terminates at its outer extremity in a slightly rounded contour. Each wedge consists of a series of radiating vascular laminae, separated by numerous medullary rays, which latter consist of long and, for the most part, single vertical rows of mural cells. These six exogenous wedges are separated from each other by a large wedge of cellular cortical parenchyma, the cells of which are elongated radially and have a somewhat mural arrangement. As those between any two contiguous wedges proceed outwards, they separate more or less definitely into two series, which diverge right and left to sweep round the peripheral extremity of each nearest exogenous wedge, meeting and blending with a similar set coming from the opposite side of the wedge. In doing this they form a sort of loop, enclosing a semilunar mass of smaller cells interposed between the loop and the outer end of the exogenous wedge. The author demonstrates that this enclosed cellular tissue is essentially a cambial layer, out of which all the new vessels and peripheral extensions of the medullary rays were developed. Young vessels are seen at its inner surface in process of formation. External to these two specialized cortical tissues there is, in these matured stems, a mass of the primitive cortical parenchyma seen

in the youngest shoots, enclosed, as before, in a double layer of epidermal cells.

The author has traced the development of branches from this axis. They are given off from single exogenous wedges in a very peculiar but eminently exogenous manner, the details of which are given in the memoir. But, besides these, other clusters of vessels are given off which have no exogenous development or radiating arrangement. It is not yet clear what these secondary vascular bundles signify.

The author points out the general resemblance between this development of the detached exogenous wedges and that of the 4-partite woody axes of the Bignonias of Brazil, demonstrating at the same time their very marked differences.

Though no traces of leaves have yet been discovered in connexion with these stems, the author has very little doubt that they belong to some Lycopodiaceous plant. The nature of the vessels and the simplicity of their arrangement alike indicate cryptogamic features, at the same time that their mode of development indicates, with remarkable distinctness, that we have here another example of that exogenous mode of development of which the author has already described so many modifications amongst the fossil stems from the Coal-measures. The occurrence of this physiological process of exogenous growth in a stem which, when matured, was little more than one tenth of an inch in diameter, shows that its occurrence is not merely a question of the size of the plant, as some have supposed, but that it has a deeper meaning, and corresponds more closely than has been supposed with the exogenous developments seen equally in large and small examples of living plants.

MISCELLANEOUS.

On a new intermediate Type of the Subkingdom Vermes (Polygordius ?, Schneider). By M. EDMOND PERRIER.

THE study of intermediate types becomes of more and more importance in proportion as one knows more of the organization of the creatures constituting the great primary groups of the animal kingdom. The number of these types, formerly very limited, becomes every day greater as the means of investigation and the naturalists devoted to the study of the organization of animals become more numerous. The subkingdom Vermes has proved particularly fruitful in this respect, so much so that, besides the great classes that every one knows, it has become necessary to create small classes to receive some creatures still completely isolated in existing nature—such as the *Sagitta*, *Balanoglossi*, *Polygordii*, and many others. I had the good fortune at Roscoff, in the products